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ABSTRACT

Investigators compared the emotional adjustment, intellectual functioning, scholastic performance, and social behavior of 54 children who became schizophrenic mental patients with that of 143 matched controls. The following conclusions were drawn: indications of potential schizophrenia include behavioral and emotional deviation in childhood, death of one's parent during childhood, serious organic handicap, declining mathematical ability in adolescence, and family conflict; behavioral deviations of preschizophrenics were obvious enough that teachers commented on them spontaneously in cumulative school records; behavioral differences did not appear prominently until adolescence; and behavioral deviations in preschizphrenic boys and girls differed as did their patterns of change. There was little evidence of either alienation or reversal in sex role adjustments for either gender. The preschizophrenics achieved lower overall I. Q. scores, but they did not differ from their own siblings in intelligence. Since patterns of mathematical deviancy were the same for boys and girls, it was concluded that a deficiency in mathematical skill was prodromal for both genders of the cognitive disruption that often characterize schizophrenics. (Author/GW)

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PERSONALITY DEVELOPMENT IN PUBLIC SCHOOL CHILDREN

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SUMMARY

This project studied, via school records, the scholastic and personal development of children who became normal adults and those who became schizophrenic mental patients. The factors of chief interest were emotional adjustment, intellectual functioning and scholastic performance, and social behavior. We found that the schizophrenics-to-be deviated sharply from the normals in social behavior and classroom adjustment, especially in the adolescent years. The patterns of deviance were different for boys than girls. There was little evidence of either alienation or reversal in sex role adjustment for either gender. The schizophrenics achieved lower overall I.Q.'s and lower grades in mathematics than the normals, but they did not differ from their own siblings in intelligence. Since the patterns of mathematical deficiency were the same for boys and girls, we concluded that this deficiency is not related to deviant sex role development, but is prodromal for both genders of the cognitive disruption that often characterizes schizophrenics. Quantitative ratings of personality traits by high school teachers corroborated the conclusion drawn from the analysis of teachers' qualitative remarks that schizophrenics-to-be leave behavioral benchmarks of social deviance before they depart from the public schools. There were no indications of abnormal physical growth in the patients as a group, although more of them had organic handicaps that could interfere with psychological growth. More of the patients had a parent die before leaving school and more were exposed to family conflict at home.

Since there were several clear indications of deviance in public school, long before the explicit onset of psychiatric disorder, it was concluded that much more could and should be done to prevent subsequent disorder through interventions in the public schools. To this end much closer collaboration between educators and mental health professionals was recommended.

INTRODUCTION

It is narrow to define as the aims of education to teach children Reading, Writing and Arithmetic. It is no accident that the German word for "to educate" (erziehen) also means "to rear or raise". The aims of education in this country, in the broadest sense, are no less general that that, namely, to make whole adults of children, with the necessary skills and personal attributes to live rewardingly, work productively and get along well with others in our society. The success of education cannot be measured solely in terms of I.Q.'s or the number of children who graduate from high school. The ultimate measure lies in the quality of adult lives led subsequently.

The principal goal of this project was to compare the scholastic and personal development of children who later became normal adults and those who later were hospitalized for mental illness. The personality factors of chief interest were emotional adjustment, intellectual functioning, interpersonal behavior, participation in school activities, and physical growth. Another related project is planned in the future to follow up the mental patients by means of their hospital records to relate their adult adjustment and psychiatric disorder to aspects of childhood development.

Almost all mental patients fail to meet at least one of the three criteria of whole adulthood cited. Many of them find living painful or meaningless. Some of them cannot work productively, or even at all. Most of them have difficulties in their relations with other people. One of the chief lessons from psychiatric and psychological research of the last few decades is that many aspects (though not all) of adult maladjustment have important roots in childhood and adolescent experience. The primary causes of subsequent adult maladjustment may be genetic, constitutional, psychosocial, or socio-cultural. In any one case, they may be chiefly attributable to prenatal X-rays, to pathogenic family circumstances, to inadequate socialization or vocational preparation, or to social class disadvantage. Regardless of which are the primary causes, some aspects of scholastic performance and social behavior manifested in the classroom and in extracurricular activities may be prodromal signs of future maladjustment. If 1) early detection is possible and 2) interventions initiated before the child leaves school might prevent or ameliorate its occurrence, then

it behooves educators as well as social and medical scientists to discover those signs and to invent appropriate interventions. For maladjusted adults are educational failures, indirectly in that they do not meet the ultimate criteria of educational success suggested above, and directly to the extent that early detection and effective intervention are feasible but not actualized.

This project proposed to search for prodromal signs of later adult maladjustment, as reported in public school records. The criterion of adult maladjustment was crude and extreme, but reliable: admission to a mental hospital in Massachusetts with a diagnosis of schizophrenia. The experimental subjects consist of the total population of persons who attended public schools in a Boston suburban community and were admitted for the first time to any mental hospital in Massachusetts over a seven-year period with a psychiatric diagnosis of schizophrenia. The control subjects were classmates of the experimental subjects, selected without bias but matched with them for sex, race, social class, and length of secondary school attendance. None of the control subjects was ever hospitalized for psychiatric disorder in Massachusetts.

The approach of this project was mainly inductive, relying on the information that teachers and guidance counselors in the last three decades have considered important for the scholastic and personal development of pupils. However, some measure of control over the quality of this information was exercised by selecting for study a community whose public school records were adequate for the purposes of this study. The following paragraphs summarize the results, conclusions and recommendations from this research.

METHOD

Subjects

Preliminary results for about half of the schizophrenics in this project have been published (Watt et al., 1970; Watt, in press) and those reports gave extensive details of the methodology employed. The present report is based on the entire sample of 54 schizophrenics and 143 matched controls. The patients were an exhaustive sample of schizophrenics, 15-34 years old, first admitted to mental hospitals anywhere in Massachusetts between 1958 and 1965, who had attended public schools in a large Boston suburb ("Maybury"). Their cumulative school records were located and three control records for each were drawn from the files. The controls were matched individually for sex, race, age, and parental social class. Eight of the schizophrenics had non-psychotic diagnoses at first admission and only one control records was drawn for each non-psychotic in the sample. (We learned subsequently that they were unequivocally schizophrenic at later admissions.) Three control records were unusable. Therefore, in the final analysis 43 schizophrenics had three controls, 3 had two controls and 8 had one control. None of the 143 controls had ever been hospitalized for mental illness in Massachusetts before 1970.

Measures

A cumulative school record usually consisted of three parts, one for the elementary school grades through six, one for the junior high grades seven through nine, and one for the senior high school years. The results of periodic intelligence tests and physical examinations were recorded on separate forms. As the child progressed through the Maybury school system his cumulative record folder followed him, ultimately remaining in the file at the last Maybury school he attended, which was typically the high school.

One side of the elementary school card contained primarily demographic information about the pupil, his family, siblings, birth residence, and some crude estimates of his standing and progress to the sixth grade. The rest of the elementary record form consisted mainly of comments written

each year by the principal teacher under three broad headings: (1) scholastic performance in skill subjects; (2) personal characteristics, such as social, emotional, mental, and physical growth, and special abilities, interests, and disabilities; and (3) special help and guidance used during the year and recommendations for the next year.

The junior high school record format was somewhat more structured. About half of the record contained information primarily of a scholastic nature, such as attendance, curriculum, parents' and pupil's plans for the future, and school marks for the three grades. The other half listed the student's special abilities, intramural activities, clubs, outside activities, vocational experiences, use of money earned or allowed, offices held, general health, and a substantial portion of space for the principal teacher each year to write notes concerning mental health, social adjustment, work habits, subject matter achievement, and the like.

The senior high school record format was quite similar to the junior high school record, but contained in addition eight 5-point rating scales of personality traits to be filled in independently by each of the pupil's teachers in the tenth grade and in the eleventh grade.

Comparisons in this report are based upon four kinds of measures derived from the total cumulative school records. Listed from simplest to most complex, these were: 1) standardized school marks for English and Math in grades 7 through 12 (they were not available for grades K-6); 2) standardized I.Q. scores on the Kuhlmann-Anderson Test in grades 3 and 6 and on the Otis Test in grades 8 and 10 or 11; 3) the personality trait ratings from the high school record; and 4) systematic analysis of the ad lib comments written annually by the homeroom teachers. Primary emphasis will be given to the teachers' comments here. A system for coding the comments was devised comprising 37 bipolar dimensions, each with a positive and negative category. These were further combined into five rational factors based on D'Andrade's (1965) cross-cultural research. About two thirds of the records were coded blindly by a research assistant using this system. The interjudge reliability coefficients (Spearman rank correlations) for the principal coding factors were satisfactory, except Factor 4 Negative, Passivity, (.51). The coefficients for the other factors ranged from .68 to .91

with a median of .80. The coding system was revised for the scoring of the last third of the records by a different assistant. Infrequently used coding categories and redundant ones were collapsed to yield a revised system of 23 bipolar dimensions that were still combined into the same five factors. The revised system had better reliability than the original one, and when the two coding systems were correlated for 24 random records, the reliability coefficients for the principal factors ranged from .61 to .90 with a median of .81. Therefore all of the records coded with the original system were converted to the revised system for the final analysis. A summary of the revised coding system is presented in Table 1. The following example will illustrate how the coding system was used: "Jimmy is quiet and well-behaved. He is well-liked by his classmates but lacks self-confidence and seldom participates in class discussions. He works hard at his studies but has a short attention span." These comments would receive a check for coding categories 16-, 23+, 14+, 9-, 13-, 5+, and 2-. A total of 8,396 comments were coded for the 197 subjects included in this report, making an average of 43 coded comments for each record.

These data were analyzed by adding together all of the teachers' comments in each category for every child's total cumulative record and dividing that sum by the number of years for which comments were written. This yielded a ratio score that indicated the average number of comments per year for each category. Furthermore the category sums within each factor were combined and divided by the number of years of comments to give a positive ratio score and a negative ratio score for each factor. A difference score was then computed by subtracting the negative score from the positive score for each factor.

TABLE 1

SUMMARY OF THE CATEGORIES IN THE REVISED CODING SYSTEM FOR TEACHERS' COMMENTS IN THE SCHOOL RECORDS

Factor 1.	**Scholastic Motivation**
orderliness	1. careful - careless
attention	2. attentive - distractible
achievement	3. achieving - underachieving
work habits	4. organized - disorganized
effort	5. motivated - unmotivated
dependability	6. dependable - undependable
Factor 2.	**Emotional Stability**
control	7. self-controlled - emotional
anxiety	8. calm - nervous
security	9. secure - insecure
mood	10. cheerful - depressed
maturity	11. mature - immature
adjustment	12. adjusted - maladjusted
Factor 3.	**Extraversion**
group participation	13. much group participation - little
popularity	14. popular - unpopular
extraversion	15. sociable - unsociable
talkativeness	16. talkative - quiet
Factor 4.	**Assertiveness**
assertion	17. assertive - passive
leadership	18. leader - follower
independence	19. independent - dependent
Factor 5.	**Agreeableness**
disposition	20. pleasant - unpleasant
cooperation	21. cooperative - negativistic
consideration	22. considerate - egocentric
conduct	23. well behaved - misbehaved, anti-social

FINDINGS

Social Behavior and Classroom Adjustment

Systematic evidence about childhood social behavior was obtained by analyzing teachers' ad lib comments in the school records of preschizophrenic children and matched controls from the same classes. The first published report (Watt et al., 1970) analyzed the data for 30 nonmigratory schizophrenics and 90 matched controls. That report concluded that a substantial proportion of children destined to be schizophrenic as adults could be identified by their behavior in school before they break down. The patterns of maladjustment were quite different for boys and girls. The boys were primarily aggressive, with secondary evidence of internal conflict or overinhibition, and a substantial component of emotional depression. The girls were primarily overinhibited and conformed considerably more to the teachers' expectations of appropriate behavior in school. The "deviance" of the girls was much less blatant than that of the boys. On the behavioral level there was not much evidence of sex role alienation or sex role reversal for either gender. The article was selected by a distinguished international panel of experts in the field of schizophrenia for inclusion in The Schizophrenic Syndrome: An Annual Review as one of the outstanding contributions to the schizophrenia literature in 1970.

A longitudinal analysis of changes in the patterns of social adjustment, based on 23 of the same schizophrenics, has been accepted for publication (Watt, 1972). Whereas few schizophrenics were behaviorally distinguishable from their controls in early childhood (grades K-6), deviation was clear in about half of them by early adolescence (grades 7-12), a crucial period for social reality testing and the development of an adult sense of social competence. During the latter period the boys became more irritable, aggressive, negativistic, and defiant of authority but not more introverted. By contrast, the girls became more compliant, shy and introverted.

Teacher comments have been analyzed now for the total sample of 54 schizophrenics and 145 controls, and a report for publication is in preparation. A longitudinal analysis, similar to the first one, based on 39 of the preschizophrenic records, is also in preparation. The results of these studies corroborate and extend the conclusions of

the earlier reports. The main new findings are more blatant evidence of emotional instability in the boys and earlier indications of introversion and passivity in the girls. Sharp differences between the sexes remain.

Intellectual Functioning

For her doctoral dissertation at Harvard, Mrs. Amy Libensky is now completing a thorough study of the intellectual performance of the schizophrenics in school. The dissertation will be submitted in April, 1972, and a report for publication is planned. She found that the schizophrenics achieved lower overall I.Q.'s than their matched controls ($p<.01$) but did not differ significantly from their own siblings. The difference from the controls was significant both in early grades and later grades, although the deficiency of the girls was more evident in grades K-6 and the deficiency of the boys was more evident in grades 7-12. Schizophrenics with short subsequent hospitalization were equally as deficient in intelligence as those with long subsequent hospitalization, which suggests that early intellectual deficiency is not necessarily prodromal of poor psychiatric outcome.

Mrs. Lubensky also carried out a careful analysis of school marks for English and Math in grades 7-12. (They were not available for grades K-6.) The schizophrenics had lower Math marks than the controls, as expected, but the groups did not differ in English performance. The Math deficiency is interpreted as a subtle early sign of potentially radical cognitive disruption, which characterizes many adult schizophrenics. However the Math performance of the boys was not poorer than that of the girls, as we had hypothesized. Therefore we conclude the declining mathematical ability is not related to deviant social (sex role) development in boys but is prodromal of schizophrenic cognitive disruption in both genders.

Teacher Ratings of Personality Traits

Quantitative ratings of personality traits were made for all subjects by high school teachers in the 10th, 11th and 12th grades. These were analyzed and will be published in a future report. Two different rating systems were used in the years encompassed in our school records. The majority of subjects were scored under the

earlier system. The results there showed the schizophrenics were rated lower than controls on the scales labeled "personality", "initiative", "leadership", and "general promise for success." The boys were also rated lower in "reliability". A smaller number of the subjects were rated under a later revised system. These results showed very sharp sex differences. The boys differed from their controls on only one scale, being rated lower in "emotional stability". On the other hand, the girls were rated higher than their controls in "motivation", "industry" and "responsibility". Moreover, the sex x diagnosis interactions for those three scales were significant. We interpret these results to mean that for this small subsample the preschizophrenic girls were distinctly more conscientious than their controls and the preschizophrenic boys. In sum, although the rating data were not unequivocal in their interpretive significance, they clearly reinforce the conclusion drawn from the analysis of the teachers' qualitative remarks that many schizophrenics-to-be leave behavioral benchmarks of social deviance before they depart from the public cchools.

Physical Growth

A careful analysis was made of the semi-annual measurements of height and weight reported in the school records. There were no differences between the groups overall or in the patterns of development. We also examined the ratio of height to weight as a crude means of approaching body build, and the groups were indistinguishable from one another.

Other Aspects of Childhood Development

From information in the records it was possible to compare the frequency of other aspects of developmental experience believed to be associated with the etiology of schizophrenia. At least one parent died before the child completed school in 19% of the schizophrenic cases, as compared with only 8% of the controls ($p<.005$). (Parental death was also more frequent among manic-depressives than their controls, but not among neurotics or personality disorders.) More schizophrenics (39%) than controls (21%) had organic handicaps ($p<.005$) that could interfere with psychological growth. Internal family conflict was evident for more schizophrenics (33%) than controls (23%), which distinguished them significantly ($p<.05$). Parental

separation and long physical illness also showed trends toward greater frequency among the schizophrenics. A summary of these results will be published in the near future.

Comparisons with Other Patient Groups

Comparable data were collected for 94 other mental patients and matched controls. The patients included 17 manic-depressives, 32 neurotics and 45 with various personality disorders. The qualitative teachers' comments have been analyzed. Other data is still in the process of being analyzed.

Follow-up Study

For his doctoral dissertation at Harvard, Mr. John Fryer is collecting follow-up information from the hospital records of all the patients in the project. This will permit us to relate the childhood data from the school records with descriptions of adult pathology and psychiatric outcome. This work is still in progress.

CONCLUSIONS

1. As a group children destined to be schizophrenic adults behave differently in school than other children. Half of them are at least moderately distinguishable and a third are easily identifiable in childhood before they show any clear indications of psychotic disorganization. There are many indicators of risk that can be used: a) behavioral and emotional deviation in childhood, b) having a parent die during one's childhood, c) having a serious organic handicap, d) showing declining mathematical ability in adolescence, and e) experiencing family conflict at home.

2. Behavioral deviations are obvious enough that teachers comment on them spontaneously in cumulative school records.

3. These behavioral differences do not appear prominently until the adolescent years. Indeed the social and emotional behavior of the preschizophrenic children change distinctly over time. Virtually none of the negative indications were sufficient to distinguish them from other children in the grade school years, but sharp differences emerged in the junior and senior high school years. It may be that the preschizophrenics did deviate behaviorally in the early years, but that was not salient enough to warrant spontaneous comment bu their teachers. It may also be that the longitudinal changes represent only increments in degree of deviation rather than fundamental changes in their modes of adjustment in school. In reading the school records clinically, the continuity of adjustment styles over time was much more impressive than the evidence of dramatic change. For example, the preschizophrenic boys were significantly more disagreeable than their controls in the later school years, while they did not differ appreciably in grade school, producing a significant temporal interaction. It is clear from individual inspection that abrasive preschizophrenic boys were becoming somewhat more so and well behaved ones were becoming somewhat less so, but there were no startling transformations with age.

4. Behavioral deviations in the preschizophrenic boys and girls differ, and their patterns of change are also different. Therefore, any attempts at early identification of emotionally vulnerable children should look for different signs of risk in boys than in girls.

RECOMMENDATIONS

It must be clear where this work is leading. On a given day there are approximately 400,000 people hospitalized for mental illness in this country. Half of the people who fill those hospital beds are diagnosed schizophrenic, although only about one-fifth of all patients are diagnosed schizophrenic at first admission to the hospital (USPHS, 1963 & 1964). That gives you some impression of the enormous cost of this disorder, both in dollars and in terms of human life.

In 1970, 51,600,000 children attended secondary schools in the United States (Simon and Grant, 1970), By very conservative estimate, 516,000 of those children will become schizophrenic at some time in the future, most of them before they are 35 years old (USPHS, 1964). Many experts would estimate that figure at close to a million, which I consider more realistic. The great majority will require hospitalization. An appalling number will spend most of their adult lives in mental hospitals (or whatever institution replaces them) (Kramer et al., 1961).

In my judgment, half of those children could be identified as having a high risk for eventual emotional disorder before they are 18 years old. If adult schizophrenia is considered a developmental disorder, as I think it should be in a majority of cases, then the time for diagnosis and treatment is in childhood before the psychological damage is complete. And the place to do that is in the public school. It is the only institution in our society with a base broad enough to capture the majority of a population so rare as preschizophrenics. Compulsory education laws require all children to attend school through the critical developmental years from 5 or 6 to 16, and 89% of them attend regular public schools (Simon and Grant, 1970). In schools there is ample opportunity to observe--and to change--intellectual skills, interpersonal behavior and physical functioning. Through parental interest and/or their legal responsibility for the children, the school is assured at least some access to the family, where many authors (cf. Jackson, 1960) and most school teachers believe major pathogenic elements reside. To accomplish this, there must be much closer collaboration between school personnel and mental health professionals. Teachers and counselors must be relied on to

take a more active part in identifying emotionally vulnerable children and a far greater share of our mental health resources--perhaps on the order of ten times the present portion--must be made available for evaluation and treatment of such children, when referred.

I can think of five objections one might raise to such a program: 1) too inefficient, 2) too costly, 3) schools will resist, 4) inadequate manpower, and 5) no effective interventions. To these I would reply as follows:

1. Inefficient. Of course it is inefficient to set up a program to prevent a disorder that represents only 1-2% of the population. Glidewell and his associates estimate that 30% of all children were maladapted in school, and most of the children who would be targeted for early intervention would fall in that category. However, there need be no efficiency lost at all in simply evaluating the emotional development of public school children in the same way we now measure their intellectual development. This would not be expensive and would require no more advanced technology than we now possess; and it would eventually yield very valuable information about the precursors of all kinds of pathology, including schizophrenia. Moreover, it would hardly be a failure if early identification programs turned up only 20-30% of the schizophrenics-to-be and the interventions that followed benefited mostly other maladapted children. The effectiveness of "schizophrenia prevention" programs should be measured not only in hospital admission rates for schizophrenic reaction, but also in terms of criminal outcome, drug abuse, divorce rates, suicides, and the like as well.

2. Too costly. Every major public service costs a lot of money and this would be no exception. Aside from the fashionable reply about "re-ordering our priorities" --which I would endorse--I think prevention programs can be justified also on economic groups. I don't think it would cost as much to treat several hundred school children for extended periods of time as we now pay to hospitalize one schizophrenic for 30-40 years of his adult life, especially if the early treatment were provided by non-professionals.

3. Schools will resist. There is no question that principals and teachers are defensive about "outsiders" invading their institutions to change their procedures

and fundamental structure. The public schools are in a very vulnerable position politically, and school authorities have been hurt recently by the well-meaning efforts of inept professionals and do-gooding laymen. However, most of the teachers and school administrators I've asked about this plead for more help from the mental health professions. They feel literally overwhelmed by the emotional problems the children (and their families) confront them with, and by their own inability to cope with them. I'm convinced that the schools will accommodate such early intervention programs once they can be assured that they will not thereby draw the fire of the community.

4. Inadequate manpower. This is the most serious objection I see. Clearly the job can't be done if we insist on using only psychiatrists, psychologists, social workers, and nurses. The only practical solution I see is to utilize carefully selected non-professionals. Professor Emory Cowen's group at the University of Rochester is effectively treating over 500 maladapted primary school children, mainly with 60 highly selected but minimally trained housewives, who are paid no more than $3 an hour for their services. Related to this is the objection expressed by several anxious guidance counselors: "Professionals we don't need who want to dredge up problems in the children that we can't even see!" We all know that the present demand for mental health services can't be met, and trying to meet the latent need for them would be out of the question, so judicious decisions must be made about who is to be treated, when and how. But we should keep in mind that we have arrived at our present defensive posture in providing mental health services, at least in part, by our past decisions, either explicitly or implicitly, not to commit our resources more fully to prevention.

5. No effective interventions. This question has never been adequately tested longitudinally, so the reply is mainly a matter of faith. I'm confident that early intervention can be effective, and I would certainly prefer to treat schizophrenic as early as possible. In any case I'm sure our interventions won't improve without being tried.

There is one final recommendation for action I should like to urge. As most probably know, in the last few years there has been a great struggle in Washington between the Office of Budget and Management and the Department of Health, Education and Welfare over federal support

for professional training and research in mental health. I presume that similar contests take place at the state level as well. At the federal level the recent rounds seem to have been won within the administration by the Office of Budget and Management, with the resulting proposals to cut severely the funds for professional training and research and to decentralize federal support in the ear future. There is still hope that the Congress will oppose or moderate these proposals, and a vigorous campaign to that end was recently waged and won by the American Psychiatric Association. I believe we should bring whatever influence we can to bear on the Congress and the national Administration to oppose the push for austerity in federal support for training and research in mental health and education. Paying less for research and converting training grants to loans will not improve mental health in this country. And if mental health programs have to be deleted or reduced, programs of prevention would be among the first to go.

The recommendations above imply that mental health professionals have been remiss in ignoring public schools on the grounds that education is not their business. Well, the prevention of psychological disorder <u>is</u> their business and the public school is clearly the best place in our society to accomplish that, so they should <u>make</u> education their business. The counterpoint to that is the equally absurd argument that mental health is not the business of educators because their training and their mandate from society are for teaching children how to read, write, spell and count. Borrowing one of the major premises of this research project, I would argue that the aims of education should be no less general than <u>to make whole adults of children</u>, with the necessary skills and personal attributes to live rewardingly, work productively and get along with others in our society. From this viewpoint, psychologically disordered adults are, at least in part, educational failures and psychologically healthy adults are in large part educational triumphs. If it is true that educators are not adequately trained for this purpose, then it should be a matter of the highest priority for mental health professionals to help them to achieve it.

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